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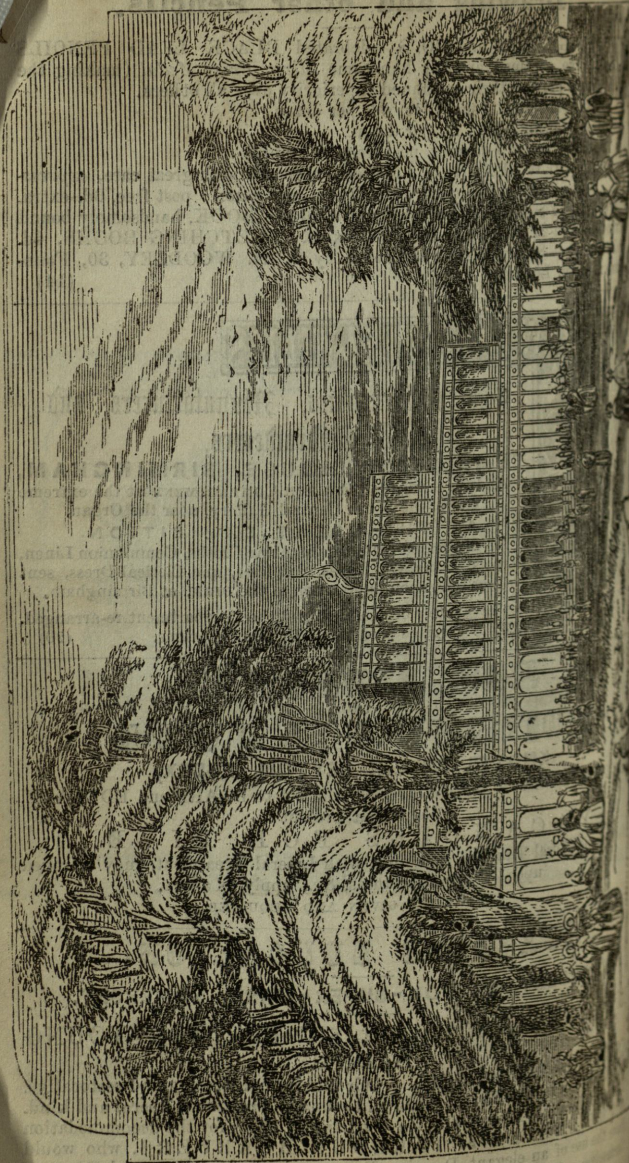
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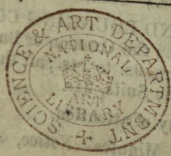
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ILLUSTRATED HAND-BOOK

GREAT EXHIBITION.

FIRST ISSUE

AUGUST 1st 1851.



LONDON:

JACKSON AND COOPER, 300, STRAND  
AND 190, HIGH HOLBORN.

26. 11. 67.

# The Great Exhibition in London.

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Samuel, Brothers' original system of charging separately for the material and making will be continued as heretofore.

The following is the system:—For a coat,  $1\frac{3}{4}$  superfine cloth, 12s. per yard, material costs £1 1s.; making and trimmings, 20s.; coat complete, £2 1s. For a vest,  $\frac{3}{4}$  superfine Cassimere, 5s. 6d. per yard; material costs 4s. 11d.; making and trimmings, 6s. 6d.; Vest complete, 10s. 7½d. For a pair of trousers,  $2\frac{3}{4}$  superfine Cassimere, 5s. 6d. per yard; material costs 13s. 1d.; making and trimmings, 6s. 6d.; Trousers complete, 19s. 7d. Suit complete, £3, 11s. 2½d.

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PALETOTS.—Saxony 1 lama Cloth Paletot, sleeves, &c. lined with silk, 24s. (this coat can be worn either as a frock or over-coat); Saxony ditto, 20s. to 34s.; Alpaca ditto, 7s. to 13s.; Cashmere ditto, 14s. to 20s.

OXONIAN, SPORTING, AND LOUNGING COATS.—Superfine Green or Black Cloth, 16s. 6d. to 28s.; the Oxonian or Business Coat, 12s. to 30s.; Black or Fancy Doeskin Trousers, 9s. to 14s.; all the new styles, 16s. to 22s. Boys' Hussar Suits, 22s.; Tunic Suits, 21s.

Our display of Vests is worthy of attention.

Suit of Mourning at Five Minutes' Notice, £2 2s.; Suit of Liver, £2 10s.

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## INTRODUCTION.

To the noble Prince, the Consort of the beloved Queen of these realms—the patron of art, science, and literature—the lover of nature and of his fellow man—the encourager of liberal views and philanthropic objects, the world is indebted for the practical realization of the Industrial Exhibition of all Nations in Hyde Park. As gratifying to the heart as instructive to the mind of man, that exhibition of the world's natural and artificial productions will mark the age of its inauguration as one of the most important epochs in human history, and still more, one of the most promising periods of an advancing civilization. To assemble from every civilized nation of the world, the inventive genius and artistic and manufacturing skill in a peaceful and intelligent competition, was an idea worthy of the age of peace congresses and rational reforms, and one which seemed fitted for opening up still nobler views of the relation of men to each other, and which seemed pregnant with broader advances for industry, intelligence, and human brotherhood. It was an idea which recognised none of the boundaries of nations, none of the land-marks or sea-marks which warlike ages had erected as barriers between hostile tribes; it saw no division of men into creeds, and castes, and colours, but regarded them as the children of one common Father, the brethren of one common family, and of whatever hue or tongue, as being alike entitled to a fair competition in the arts of peace, and in those applications of industry and skill to the natural productions of the globe, which contribute to the physical comfort, moral happiness, and social stability of the whole human race: it was an idea which set at nought the old Roman dogma of patriotism, and embraced the whole world in its benevolent arms, setting its seal for ever on exclusiveness, and making LABOUR the President of the nations, and the LABOURER the Prime Minister of earth. It is not alone, therefore, that the GREAT EXHIBITION is a subject of extraordinary popular interest, that it has been chosen as the first in the series of the *British Advertiser*; but that in addition to the great demand for authentic information of its history, aims, and characteristics, it is also a most cheering manifestation of the peaceful progression of man, and one of the greatest endeavours of modern times to promote the prosperity and permanent happiness of the peoples, and to realize an age of amity and Christian love.

## ORIGIN.

In setting forth the origin and history of the Great Exhibition, it will be necessary for us to be both concise and explicit; and in order that the present work may fulfil the purposes of a work of reference with fidelity and perspicuity, we shall review the facts in as strictly a chronological order as their nature will permit us to arrange them. We have only to glance at the history of science for the past one hundred years, to gain many glimpses and foreshadowings of its present condition; and side by side with its advances, and the efforts of its immediate friends to diffuse its principles and enlarge its sphere of operations, we may see many indications of the necessity for the great assemblage of its productions which adorns this age and nation in Hyde Park. By Watt, also, the steam-engine was organized into a machine of boundless power, infinite in its application, capable of the most delicate manipulations, the prime mover of manufacturing operations. John Harrison received the reward offered by the nation for the best chronometer, which the genius of others has made common. Pottery, to the close of the 17th century, produced nothing but coarse wares; in 1763 Josiah Wedgwood originated the Staffordshire ware, which was carried, by his knowledge, skill, and perseverance, to a degree of excellence which in several points, has never been surpassed, and in some has never been equalled. The rise and progress of cotton manufacture is, perhaps, the most extraordinary page in the annals of human industry; it was advanced by men in the humblest condition, to a system exhibiting the utmost degree of intellectual contrivance. From 1750, when the fly shuttle was invented, to 1787, when Watt brought the power of steam into operation, every year had been marked by improvement; and there are few names more honourable in the history of invention than those of James Hargreaves, Richard Arkwright, Samuel Compton, and Dr. Carpenter. In 1835, the number of self-acting looms were 109,626, whilst the entire manufacture gave occupation to 1,300,000 persons. In the moral government of the world, interests which appear selfish are made conducive to good ends. No man is permitted to prosper for himself alone. The genius which exalts or gives eternal fame to one, becomes the source of happiness to thousands. Let it be remembered, that no man can advance art, science, or literature, without at the same time promoting the social and the moral good of the entire human race. For art, science, and manufactures are as the winged messengers of heaven, which bear unto all nations—the least blessed and



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His charges are 50 per cent. lower than any other Establishment in this locality.

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Bed and Breakfast . . . . .	3	0	Do. to Rossisland and Ross		
Dinner . . . . .	2	0	Castle . . . . .	2	6
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Do. to Lore Waterfall . . . . .	3	0	Guide per day . . . . .	2	6
Do. to Mangerton for the day	5	0	No charge for sitting rooms.		

(2)

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15.

the most refined—that doctrine, sacred in its origin, eternal in its duty, of “Peace on earth, goodwill toward man.”

With the gradual improvement of manufacturing skill, and with the advancing growth of the inventive faculty, some general and concerted plan seemed requisite, in order that those immediately interested in the progress of the mechanical arts, should have some means of comparing their productions and of exhibiting them, suitably arranged to public inspection. Hence the origin of industrial exhibitions, of which our French neighbours were the first to avail themselves. It was during the first Revolution, in 1757, that the Marquis d’Avenne, upon being appointed Commissioner of the late Royal Manufactories of the Gobelins, of Sevres, and of the Savonnerie, found that two years of neglect had reduced the work almost to starvation, while it had left the warehouses full of their choicest productions. To remedy these evils, he conceived the idea of using the chateau of St. Cloud, then uninhabited, as a bazaar for the exhibition and disposal, by lottery, of the large stock of tapestry, china, and carpets on hand in these establishments. He immediately obtained the consent of the government to his proposal, and, in a few days the walls of every apartment in the Castle were hung with the finest Gobelin tapestry; the floors covered with the superlative carpets of the Savonnerie, which long rivalled the carpets of Turkey, and latterly far surpassed them; and the saloons decorated with the large and beautiful vases, the magnificent groups, and the exquisite pictures of Sevres china. The Chamber of Mars was converted into a receptacle for every kind of the most beautiful services of porcelain, with a wheel of fortune in the centre of the saloon, containing tickets for the lotteries intended to be drawn. To relieve the immediate necessities of the workmen, the Marquis procured funds, allowing a few persons to make purchases while he was pushing on his arrangements for the exhibition, but on the very day fixed for opening the bazaar, a decree of the Directory banishing the nobility, obliged him to fly, and the project for the time failed, after having been seen only by a few of the higher classes.

What had been begun by the Marquis, was soon followed up at the general desire of the nation, and at the end of the year 1797, on the return of Napoleon from the successful termination of the Italian wars, peace and its arts were universally demanded on the part of the nation; and as early to triumph in this department as he had shown himself to in its opposite, the great general at once determined that *Industry* should have its ovation, as *War* had already achieved its triumph. On the same spot in the Champ de Mars



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Bed-room patterns at a half-penny per yard; parlour and staircase in great variety at a penny per yard; beautiful drawing-room patterns, quite new design, only twopence per yard; oaks and granites, one penny per yard.

The trade and country dealers supplied on advantageous terms. Patterns sent for approval, and goods pre-paid sent FREE of expense.

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## GREAT EXHIBITION.

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Jeremiah Smith, of 42, Rathbone-place, SOLE INVENTOR AND MANUFACTURER, begs respectfully to call the attention of the Nobility, Gentry, and others, to his Specimens of adhesive Envelopes and Note Papers, consisting of upwards of Two Hundred Impressions, of Arms, Crests, Cyphers, Names, &c., beautifully embossed in gold, silver, heraldic colours, and in black for mourning.

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Apply to James Holgate, wholesale and export ironmonger, 9, Arthur-street, West. A liberal discount allowed to the trade.

18.

which the *army* had celebrated the inauguration of the noble collection of Italian spoils, and but six weeks after that *fête*, the *nation* erected the "Temple of Industry," and exhibited specimens of the blessings and advantages of *peace*. The temple stood in the midst, while around it were arranged sixty porticoes filled with all that Paris or its vicinity could produce, either of use or beauty. The galleries remained open only during the three complementary days of the year VI. of the Republic, 1798; but excited the greatest enthusiasm throughout the country. This was the first official exposition; and at the end of three years the second exhibition was celebrated. This was followed, in 1802, by the third exposition, at which the hydraulic-ram of Montgolfier; the stocking frame of Aubert; the silk-spinning machine of Vaucanson; and the chemical products of Messrs. Decroisilles, of Rouen, and Amfry and Darcet, of Paris, among a crowd of other scarcely less worthy objects, were rewarded with gold medals, of which this time no less than twenty-two were distributed. One of the immediate and most important results of the extended popularity of these institutions was the establishment, shortly after the close of this exposition, of the *Société d'Encouragement*, one which has aided, in an extraordinary degree, the inventive talent of France, and the application of abstract science to the wants and requirements of manufacture.

The expositions which followed were in 1806, 1819, 1823, 1827, 1834, 1839, 1844, and 1849, which last was the eleventh which had taken place, and was on a scale of great magnificence. On this occasion the area of the building covered no less than 22,391 square metres, or 27,214 square yards of English, equal to about five acres, two and a half roods—the number of exhibitors amounting to 4494, and that of the central jury to 64. The whole of the building was constructed of wood;—the roofs being covered with zinc: of the latter material 400,000 kilogrammes, equal to nearly 4000 tons, are stated to have been used, and of the former nearly 45,000 pieces of timber.

		Francs.	£
Cost of the building in 1839	was	363,791,	about 14,550
"	"	1844	" 15,050
"	"	1849	" 16,000

If to this last amount we add £2,000, the lowest estimated the cost of the *agricultural shed*, making the whole sum expended equal to £18,000, the difference of about £3000 between the outlay of the present year and that of the year 1844 will be satisfactorily accounted for.

It was an idea entertained by M. Buffet, the French Minister



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**MR. JOSEPH JAMES REYNOLDS**, late of Camborne, Cornwall, begs to inform his friends and the public he has COMMENCED BUSINESS as a **MINING and GENERAL AGENT**, at the above offices, and trusts by paying due regard to the welfare of his clients that he will at all times merit their confidence. Having been connected with the management of mines in the most productive districts of Cornwall upwards of twenty years, and being in communication with some of the most respectable agents in the mining districts, Mr. Reynolds will be enabled at all times to furnish such information as may be relied on.

J. J. R. will carry on business upon commission only, making no intermediate price between buyers and sellers, and will be ready at all times to introduce the buyer and seller of any shares to each other.—Office hours 10 to 4

ter of Agriculture and Commerce, previous to 1849, to admit the productions of neighbouring nations to the forthcoming Eleventh Exposition; but this idea, having been coldly received, was abandoned by him, and being adopted by Prince Albert, led to the bold project of an Exhibition, not confined merely to neighbouring nations, but open to the whole commercial world. At first the real magnitude and the great difficulties of the project were not fully perceived, and the proposal was scarcely made public by the Society of Arts, before impediments began to rise up in their way, and for more than a year difficulty after difficulty beset them. Though they took the greatest pains to enlist our manufacturers generally by sending competent agents and lecturers amongst them to explain its objects and its advantages to this country, serious opposition to it existed until the middle of last year. Had the project been tried in France, it would have been carried through with far less difficulty, as it would have had the advantage of the power and purse of the government, which being utterly impossible with our habits of public action, it was absolutely necessary to make the proposition popular. When the time comes for giving a faithful history of its struggles, the Society of Arts will reap the enduring honour it deserves, and every one of its members who took an active part in pushing it on, will have ample reason to be proud of what he has done. And we do not say it in a spirit of sycophancy, because he is a prince, but in honest admiration of his manly conduct, to Prince Albert by far the greatest share of honour will be found due. To him, more than to any one else, we owe the adoption of the idea from the French minister, its generous and enlightened enlargement, and that courageous and persevering conduct, in all that related to the Exhibition, which has overcome every obstacle.

## EARLY HISTORY.

On the 30th June, 1849, there attended at Buckingham Palace H. R. H. Prince Albert, and by special command Messrs. T. Cubitt, H. Cole, F. Fuller, and J. Scott Russell, of the Society of Arts, when his Royal Highness communicated his views regarding the formation of a great collection of the works of Art and Industry in London in 1851, for the purposes of exhibition, competition, and encouragement. It was proposed that it consist of the following divisions:—raw materials, machinery, and mechanical inventions, manufactures, sculpture, and plastic art generally. It was a matter of consideration whether such divisions should be exhibited simply





## THE EGYPTIAN BALSAM.

THE most effectual Remedy for COUGHS, COLDS, INFLUENZA, &c.  
 Prepared only by W. J. COOPER, Surgeon, Canterbury, in Bottles at  
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Can be had of all druggists through Messrs. Barclay and Sons, Farringdon-  
 street; Edwards, 69, St. Paul's Churchyard; Baiss, Lower Thames-street,  
 London.

neously, or separately. It was ultimately decided that they should be simultaneous ; it was further settled that by offering prizes, an inducement would be held out to the various manufacturers to produce works which, although they might not form a manufacture profitable in the general market, would, by the effort, permanently raise the powers of production, and improve the character of the manufacture itself. It was settled that the best mode of carrying out these plans would be by a Royal Commission, of which his Royal Highness would be at the head. It was determined also that a subscription for donations, on a large scale, should be immediately organized, and various efforts made for the collection of the necessary funds. On the 14th of July, the second meeting was held at Osborne, when his Royal Highness judged that the importance of the subject was fully appreciated, but the magnitude of the undertaking required time for maturing the plans essential to ensure its complete success. It was urged that one of the requisite conditions for the acquirement of public confidence was, that the body to be appointed for the exercise of these functions should have a sufficiently elevated public position, should be sufficiently high above the interests, and remote from the liability of being influenced by the feelings of competitors, to place beyond all possibility any accusation of partiality or undue influence ; and that no less elevated a tribunal than one appointed by the Crown, and presided over by Prince Albert, could have that standing and weight that could command the utmost exertions of all the most eminent manufacturers at home and abroad.

In order to ascertain how far the manufacturers were willing to support these plans, Mr. H. Cole and Mr. F. Fuller, members of the council of the Society of Arts, received instructions to travel through the manufacturing districts to collect the opinions of the leading manufacturers. Either jointly or singly these gentlemen visited all the larger towns, and on their return drew up in a report the results of their inquiries to the 5th of October, 1849. The result in all places was the same ; there was one uniform feeling of gratitude to Prince Albert for the interest he showed in the commercial prosperity of this land, and a general belief in the benefits which would result from the undertaking, and a hope that it would prove the means of hastening the period when nations shall "beat their swords into ploughshares, and their spears into pruning hooks."

Besides the deputations sent to the manufacturing districts of Great Britain, Mr. Scott Russell visited Frankfort, Cologne, Dusseldorf, Hamburg, Leipzig, Stettin, Berlin, and other towns of Germany, to make inquiries in the most important quarters



## GRAND TEETOTAL DEMONSTRATIONS IN THE METROPOLIS

IN CONNEXION WITH THE

GREAT EXHIBITION OF THE WORKS OF INDUSTRY OF ALL NATIONS.

**THURSDAY, July 31, and FRIDAY, August 1.**—A CONFERENCE in the Lecture Hall of the Literary Institution, Aldersgate-street, for the purpose of receiving Reports of the Progress of the Temperance Cause, and for the Discussion of such Questions as may be deemed of importance to its more rapid progress. SAMUEL BOWLY, Esq., of Gloucester, to preside. In addition to those specially invited or introduced, Members of Temperance Societies will be admitted on presenting their Cards of Memberships, or notes from the Secretaries of their respective Societies. Business to commence at ten o'clock precisely.

**SUNDAY, August 3.**—TEMPERANCE SERMONS will be preached in various places, which will shortly be announced.

**MONDAY, August 4.**—MEETING in EXETER HALL, at six o'clock in the evening; LAWRENCE HEYWORTH, Esq., M.P., to preside. The object of this Meeting is to give a hearty welcome to the Teetotalers who may be present from various parts. A select company of the celebrated Welsh Choristers are expected to sing some of their popular melodies. Admission Free.

**TUESDAY, August 5.**—The Teetotalers to meet in Hyde-park at nine o'clock, near the entrance at Hyde-park Corner, Piccadilly, and proceed in line to the CRYSTAL PALACE.

**WEDNESDAY, August 6.**—A PUBLIC BREAKFAST at the London Tavern, Bishopsgate-street, at 9 o'clock precisely; J. S. BUCKINGHAM, Esq., to preside. The Meeting to be addressed chiefly by strangers, from America, &c. Admission by Ticket, price 2s. 6d.—For the AFTERNOON and EVENING of Wednesday, the SURREY ZOOLOGICAL GARDENS are specially engaged, when, in addition to the Zoological Collection, Jullien's Concerts, magnificent Views of the Colosseum, and the matchless Fireworks, the Welsh Choristers will sing some of their favourite pieces, and the Shapecott Family will perform on their celebrated Sax Horns. During the afternoon Teetotal Addresses will be delivered, and a Loyal Address to the Queen, and a Petition to the House of Commons, will be presented for signature. Admission One Shilling.

**THURSDAY, August 7.**—An AGGREGATE MEETING in ST. MARTIN'S HALL, Long-acre, at six o'clock, p.m.; Chair to be taken by JOSEPH LIVESLY, Esq., of Preston, and Addresses to be delivered, chiefly, by some of the Men of Preston. The Welsh Choristers will attend.

**FRIDAY, August 8.**—A MEETING in the ROSHERVILLE GARDENS, Gravesend, at two o'clock in the afternoon. Several eminent advocates will be present. Steamboats will leave London-bridge-wharf every hour. Admission to the Gardens, Sixpence.

The Committee respectfully invite attention to the above announcements.

Office, 59, Fleet-street, London.

I. DOXSEY,  
T. C. PREBBLE,  
E. GRIFFITHS, } Hon. Secs.

as to the probability of co-operation in this undertaking of the nations included in the Zollverein. He found the liberality, wisdom, and advantages of the great plan everywhere appreciated, and every disposition manifested to afford co-operation. By the end of November more than 3000 influential names were sent in as supporters of the scheme, and by January the Executive Committee had obtained 6,000. Among the details of the subsequent history of preliminaries we find the publication, in the *Gazette* of January 5, 1850, of the names of the gentlemen then composing the Royal Commission, which were as follows:—

## ROYAL COMMISSION.

His Royal Highness Prince Albert, K.G., F.R.S., His Grace the Duke of Buccleuch, K.G., F.R.S., Right Hon. the Earl of Rosse, K.G., Pr. of R.S., Right Hon. the Earl Granville, Right Hon. the Earl of Ellesmere, Right Hon. Lord Stanley, Right Hon. Lord John Russell, M.P., F.R.S., Right Hon. Sir Robert Peel, Bart., M.P., F.R.S., (since deceased), Right Hon. Henry Labouchere, M.P., Right Hon. W. E. Gladstone, M.P., Sir Archibald Galloway, K.C.B., (since deceased), or the Chairman of the East India Company for the time being, Sir Richard Westmacott, R.A., Sir Charles Lyell, F.R.S., Pr. of G.S., or the President of the Geological Society for the time being, Thomas Baring, Esq., M.P., Charles Barry, Esq., R.A., F.R.S., Thomas Bazley, Esq., Richard Cobden, Esq., M.P., William Cubitt, Esq., F.R.S., or the President of the Civil Institution of Engineers for the time being, Sir Charles Lockhart Eastlake, P.R.A., F.R.S., Thomas Field Gibson, Esq., John Gott, Esq., Samuel Jones Loyd, Esq., (since created Baron Overstone), Philip Pusey, Esq., M.P., F.R.S., William Thompson, Esq., M.P.,

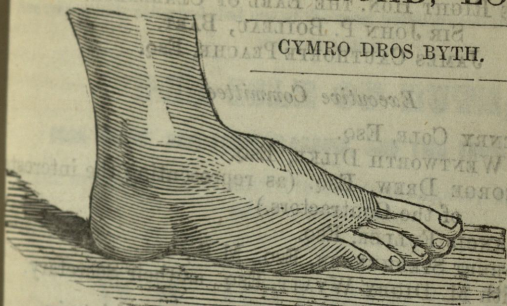
J. Scott Russell, Esq., F.R.S. } Secretaries.  
Stafford Henry Northcote, Esq. }

Robert Stephenson, Esq., M.P., F.R.S., who had been gazetted as a member of the Executive Committee, and who had been appointed its Chairman, was subsequently added to the Royal Commission. John Shepherd, Esq., the new Chairman of the East India Company, succeeded his deceased predecessor, Sir Archibald Galloway, K.C.B. The vacancy created by the lamented death of Sir Robert Peel, the last act of whose glorious public career was to attend a meeting of the Commission, has not been filled up. A glance at these names will show that it would have been difficult to select a list more perfectly



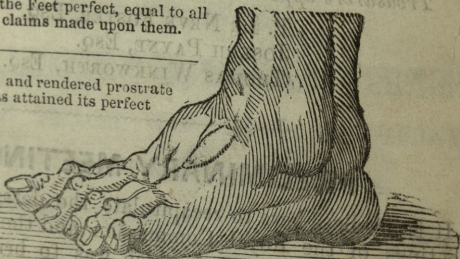
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THE RIGHT HON. THE EARL OF CLARENDON.

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*Executive Committee.*

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C. WENTWORTH DILKE, ESQ.

GEORGE DREW, ESQ. (as representing the interests of the Contractors.)

FRANCIS FULLER, ESQ.

ROBERT STEPHENSON, ESQ., M.P.,

With M. DIGBY WYATT, ESQ., as their Secretary.

*Treasurers appointed to receive the Money ad interim.*

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JOSEPH PAYNE, ESQ.

THOMAS WINKWORTH, ESQ.

## PRELIMINARY MEETINGS.

It is needless here to recapitulate the details of the various meetings of the Royal Commission and the Executive Committee, the chief object of which was to bring the question prominently before the attention of the public; but the most influential was the City meeting, held in the Egyptian Hall, under the presidency of the Lord Mayor, on the 17th of October, 1849, to receive a deputation of members of the Society of Arts, to explain the outlines of His Royal Highness's proposal for a Great Exhibition of Industry of All Nations, to be held in London in the year 1851. This meeting was attended by between three and four hundred of the most influential merchants, bankers, and traders,—in short, by the *élite* of the City magnates.

At this meeting a speech of extraordinary merit was delivered by Mr. Cole, better known as "Felix Summerly," through whose untiring exertions, more than to those of any other individual man, the idea of the Prince owes its successful issue. The organization of the great scheme proceeded in good earnest; capitalists were induced to enter into the project; the manufacturing interest was denuded of its prejudices; and at a



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Argyleshire, Frith of Clyde, and distinctly in the distance  
the Renfrewshire hills, and has

*A large Fruit and Flower Garden attached.*

Board, Lodging, and Attendance, 6s. to 8s. per day.

grand dinner given by the Lord Mayor of London to the magistrates of the cities and towns of the United Kingdom, the projected Exhibition attained the highest popularity it enjoyed previous to its actual inauguration. At that dinner speeches were delivered by Prince Albert, the Archbishop of Canterbury, the French Ambassador, Lord John Russell, Lord Stanley, the late lamented Sir Robert Peel, the Earl of Carlisle, and others ; and in spite of jealousies, inuendoes, and prejudices the great work steadily marched on to its completion.

## PRIZES.

On the 23rd of March an invitation was given to the artists of all countries to compete for the designs of three bronze medals, to be the rewards of successful exhibitors ; three prizes of £100 each being offered for the three reverses which appeared most meritorious and suitable, and three prizes of £50 each for the three best designs which were not accepted. The successful competitors were,

- |                                             |             |
|---------------------------------------------|-------------|
| No. 1. Mons. Hippolyte Bonnardel, of Paris, | } £100 each |
| 2. Mr. Leonard C. Wyon, . . . of London,    |             |
| 3. Mr. G. G. Adams, . . . of London,        |             |
| 4. Mr. John Hancock, . . . of London,       | } £50 each  |
| 5. Mons. L. Weiner, . . . of Brussels,      |             |
| 6. Mons. Gayrard, . . . of Paris,           |             |

The following were some of the best designs :—Peace standing on the rocks of Britain with her beacon lighted ; Britannia awarding her laurel crown ; Minerva Pacifica recommending to mankind the useful and graceful arts ; Industry rejoicing at war doing homage to peace ; Science and Handicraft attending on each other ; Peace distributing plenty ; Britannia presenting fame to an artisan.

## THE BUILDING.

With this outline of preliminary proceedings the reader will be prepared for a consideration of the more important step of providing a suitable building for the purpose contemplated, and it may readily be imagined that this was a subject of early and anxious deliberation on the part of the Royal Commissioners.

Without anything like precedent to guide them, and in utter ignorance of the amount of pecuniary support likely to be placed at their disposal, its very extent must of necessity



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for some time have been a matter of uncertainty. Great as were the difficulties, they were, however, to be grappled with, and, at the third meeting of the Commissioners, the following gentlemen were appointed to act as a committee for all matters relating to the Building:—His Grace the Duke of Buccleuch, K.G., F.R.S.; the Right Hon. the Earl of Ellesmere, F.S.A.; Charles Barry, Esq., R.A., F.R.S.; William Cubitt, Esq., F.R.S., Pr. of I.C.E.; Robert Stephenson, Esq., M.P., F.R.S.; C. R. Cockerell, Esq., R.A.; J. K. Brunel, Esq., F.R.S.; Thomas L. Donaldson, Esq., M.I.B.A.

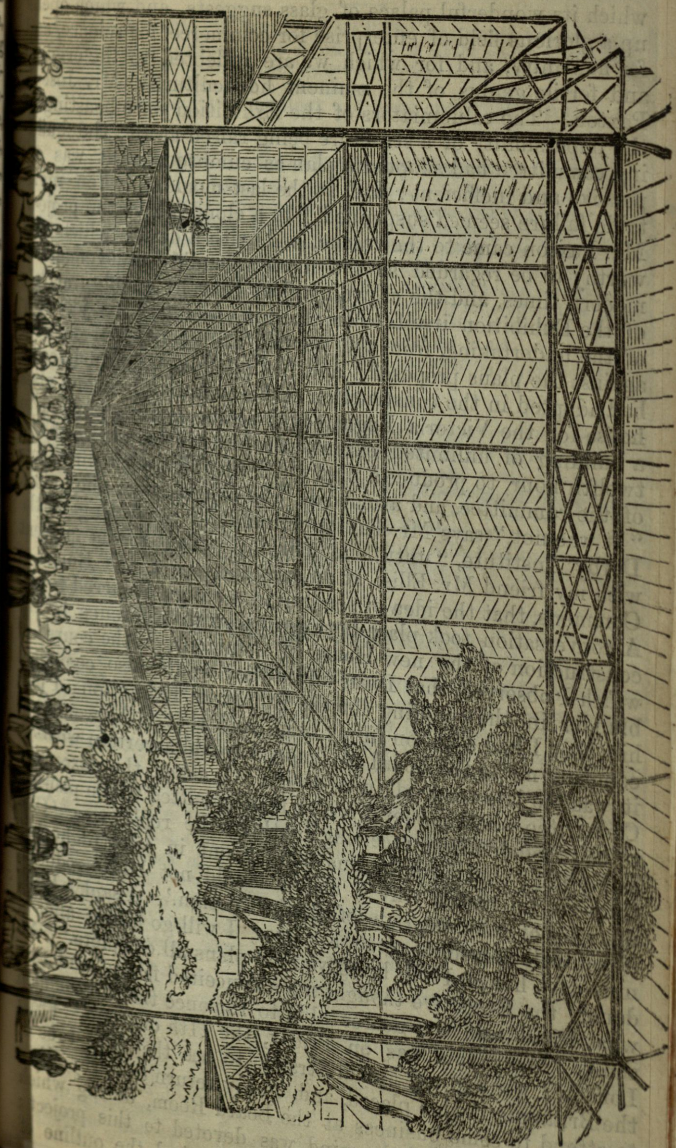
It is well known that the site ultimately determined on in that part of Hyde Park which lies between the Kensington road and the ride which is called Rotten-row; the centre of the building being opposite the Prince of Wales's Gate, a situation in all respects desirable, and one which has met with very general public approval. A document issued by the Building Committee, inviting architects of all Nations to make suggestions for the general arrangements of the building, called forth designs from two hundred and thirty-three competitors, 38 of which were contributed by foreigners, (France, 27; Belgium, 2; Holland, 3; Hanover, 1; Naples, 1; Switzerland, 2; Rhine Prussia, 1; Hamburgh, 1;) 128 by residents in London, and its environs; 51 by residents in provincial towns of England; 6 by residents in Scotland; 3 by residents in Ireland, and 7 were anonymous.

To three of the native and fifteen of the foreign plans, commendation was given; but no one satisfying the committee, they perfected one for themselves, from the various suggestions afforded by the competing architects, adding on, "as their own exclusive contribution, a dome of gigantic proportions." This dome was so unpopular, and the contest about its site was so fierce, that the whole scheme of the Exhibition was in some danger. The building determined on by the committee was to have been 2000 feet long, rather more than 300 feet across, extending over an area of 20 acres. Passages, 48 feet wide, clear and uninterrupted, except by seats, were to connect the various entrances; and at the intersection of these lines, it was proposed to form a grand circular hall for sculpture, 200 feet in diameter. Considerable spaces, surrounding the old trees, were to be fitted up as refreshment rooms, surrounding ornamental gardens; the outer walls of the building were to have been of brick, and the light derived principally from skylights.

Here, however, we arrive at the most momentous period in this eventful history—a period pregnant with great and unexpected results, not merely to the Exhibition itself, but to science and civilization generally. One of the most momentous



...ent results of the Exhibition is the new order of architect



...to record... who mind was devoted to this work  
time, however, the business proceeded, & sketched the outline  
and, whilst the business proceeded, & sketched the outline

cent results of the Exhibition is the new order of architecture which its wonderful palace of glass suggests, and which opens up a glorious field of enterprise for commerce, for science, and for humanity, and for which we are indebted to the original and fertile genius of the eminent horticulturist, Mr. Joseph Paxton. The calumniators of the Exhibition were boasting of the impossibility of a structure being raised at all; the building committee had adopted a plan as cumbrous as it was expensive and inefficient; and, at the last moment, when inevitable failure seemed suspended, like a cloud, above the project, Mr. Paxton came to the rescue, and with a design which was worthy to be regarded as the most splendid achievement of modern times, and the crowning glory literally and figuratively of the Exhibition itself. Mr. Paxton, seeing "the jeopardy of the undertaking, from the forcible arguments put forward against the plans proposed," and feeling that the principles he had adopted in the construction of his immense iron and glass house for the Victoria Regia, could be successfully applied to a building of unlimited extent, set himself to work, at the twelfth hour, to produce a plan which met all the requirements of the committee, and avoided all the objections of the public. "It was not," says Mr. Paxton himself, at a meeting of the Derby Institute, "until one morning, when I was present with my friend Mr. Ellis, at an early sitting in the House of Commons, that the idea of sending in a design occurred to me. A conversation took place between us, with reference to the construction of the new House of Commons, in the course of which I observed, that I was afraid they would also commit a blunder in the building for the Industrial Exhibition; I told him that I had a notion in my head, and that if he would accompany me to the Board of Trade, I would ascertain whether it was too late to send in a design. I asked the Executive Committee whether they were so far committed to the plans as to be precluded from receiving another; the reply was, 'Certainly not; the specifications will be out in a fortnight, but there is no reason why a clause should not be introduced, allowing of the reception of another design.' I said, 'Well, if you will introduce such a clause, I will go home; and, in nine days hence, I will bring you my plans all complete.' No doubt, the Executive thought me a conceited fellow, and that what I had said was nearer akin to romance than to common sense. Well, this was on Friday, the 11th of June. From London I went to the Menai Straits, to see the third tube of the Britannia Bridge placed, and, on my return to Derby, I had to attend to some business at the Board Room, during which time, however, my whole mind was devoted to this project; and, whilst the business proceeded, I sketched the outline of



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my design on a large sheet of blotting-paper. Well, having sketched this design, I sat up all night, until I had worked it out to my own satisfaction ; and, by the aid of my friend Mr. Barlow, on the 15th, I was enabled to complete the whole of the plans by the Saturday following, on which day I left Rowsley for London. On arriving at the Derby station, I met Mr. Robert Stephenson, a member of the Building Committee, who was also on his way to the metropolis. Mr. Stephenson minutely examined the plans, and became thoroughly engrossed with them, until at length he exclaimed that the design was just the thing, and he only wished it had been submitted to the Committee in time. Mr. Stephenson, however, laid the plans before the Committee, and at first the idea was rather pooh-poohed ; but the plans gradually grew in favour, and by publishing the design in the *Illustrated News*, and showing the advantage of such an erection over one composed of fifteen millions of bricks and other materials, which would have to be removed at a great loss, the Committee did, in the end, reject the abortion of a child of their own, and unanimously recommended my bantling. I am bound to say, that I have been treated by the Committee with great fairness. Mr. Brunel, the author of the great dome, I believe was at first so wedded to his own plan, that he would hardly look at mine. But Mr. Brunel was a gentleman, and a man of fairness, and listened with every attention to all that could be urged in favour of my plans. As an instance of that gentleman's very creditable conduct, I will mention, that a difficulty presented itself to the Committee as to what was to be done with the large trees, and it was gravely suggested that they should be walled in. I remarked, that I could cover the trees without any difficulty ; when Mr. Brunel asked, 'Do you know their height ?' I acknowledged that I did not. On the following morning Mr. Brunel called at Devonshire-house, and gave me the measurement of the trees, which he had taken early in the morning, adding, 'Although I mean to try to win with my own plan, I will give you all the information I can.' Having given this preliminary explanation of the origin and execution of my design, I will pass over the question of merit, leaving that to be discussed and decided by others, when the whole shall have been completed."

The events which immediately transpired in reference to Mr. Paxton's plan, afford a splendid series of illustrations of our mechanical and commercial resources. Here in a few days were arranged the whole details of cost and manufacture, for a building intended to cover 18 acres of ground, and with such precision as to ensure to all parties a fair and legitimate profit. In order to do this (to quote Charles Dickens's admir-



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able "Household Words,") the glass-maker promised to supply in the required time, nine hundred thousand square feet of glass, (weighing more than four hundred tons) in separate panes, and these the largest that ever were made of sheet glass; each being forty-nine inches long. The iron-master passed his word in like manner to cast in due time three thousand three hundred iron columns, varying from fourteen and a half feet to twenty feet in length; thirty-four *miles* of guttering tube, to join every individual column together under the ground; two thousand two hundred and twenty-four girders (but some of these are of wrought iron): besides eleven hundred and twenty-eight bearers for supporting galleries. The carpenter undertook to get ready within the specified period two hundred and five *miles* of sash-bar; flooring for an area of thirty-three millions of cubic feet; besides enormous quantities of wooden walling, louvre work, and partition.

It is not till we reflect on the vast sums of money involved in transactions of this magnitude, that we can form a slight notion of the great, almost ruinous loss, a trifling arithmetical error would have occasioned, and of the boundless confidence the parties must have had in their resources and in the correctness of their computations. Nevertheless it was one great merit in Mr. Paxton's original details of measurement that they were contrived to facilitate calculation. Everything in the great building is a dividend or multiple of *twenty-four*. The internal columns are placed twenty-four feet apart, while the external ones have no more than eight feet (a third of twenty-four) of separation; while the distance between each of the transept columns is three times twenty-four, or seventy-two feet. This also is the width of the middle aisle of the building; the side aisles are forty-eight feet wide, and the galleries and corridors twenty-four. Twenty-four feet is also the distance between each of the transverse gutters under the roof; hence, the intervening bars, which are at once rafters and gutters, are, necessarily twenty-four feet long.

There was little time for consideration, or for setting right a single mistake, were it ever so disastrous. On the prescribed day the tender was presented, with whatever imperfections it might have had, duly and irredeemably sealed. But, after checkings have divulged no material error. The result was, that Messrs. Fox and Henderson's offer for erecting the Paxton edifice proved to be the lowest practicable tender that was submitted to the Building Committee.

The contract was taken by Messrs. Fox and Henderson for the sum of £79,800, and the materials after the close of the Exhibition; or if permanently retained, £150,000. The entire edifice consisting of 33,000,000 cubic feet, its cost at this esti-



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mate will only be a little more than a halfpenny per cubic foot or if made a permanent fixture, rather less than a penny and one twelfth of a penny per cubic foot: the cost of an ordinary barn being about twopence half-penny per foot. In the erection of this work, not a vestige of either stone, brick or mortar has been necessarily used; wood, iron, and glass, being the only materials required.

## General Statistics of the Building.

A *résumé* of the statistics of this marvellous edifice will best convey, at a glance, an idea of its vastness:—It consists of a nave 72 feet wide, and 64 feet high, with a series of side aisles, two of 48 feet, and six at 24 feet wide, of the respective heights of 43 and 23 feet, the whole spreading to a width of 456 feet; the total length is 1851 feet: a transept, 408 feet long and 72 feet wide, intersects the building at right angles in the centre; this transept is covered with a semicircular roof, springing at a height of 64 feet from the level of the ground, and making the entire height 110 feet. The total area of the ground floor is equal to 772,784 square feet, and that of the galleries to 217,100 square feet. The galleries are 24 feet wide and extend nearly a mile. The table space for exhibitors is more than 8 miles in length. The total cubic contents of the building are 33,000,000 feet. In addition to the timber for joists, flooring, &c., the glass and supports of iron comprise the entire structure; the columns, sash-bars, and panes of glass, are similar in form throughout. There are 2,244 cast-iron girders for supporting galleries and roofs, in addition to 1,128 intermediate bearers, 358 wrought iron trusses for supporting roof, 34 miles of gutters for carrying water to the columns, 202 miles of sash-bars, and 900,000 superficial feet of glass, weighing 400 tons. The average weight per superficial foot of the ordinary roofing is only  $3\frac{1}{4}$  lb. The tender for its construction was accepted on the 26th of July, 1850; possession of the site was obtained on the 30th of July; the first column was fixed on the 26th of September; and only 145 working days after the commencement, but little of the vast building remained to be finished. To give an idea of the enormous extent of the building, it may be noticed, that the width of the main avenue is within ten feet double that of St. Paul's Cathedral, whilst its length is more than four times as great. The walls of Saint Paul's are 14 feet thick, those of the "Crystal Palace" only eight inches. Saint Paul's occupied thirty-five years in building, whilst the Hyde Park building occupied less than half that number of weeks; the celerity of



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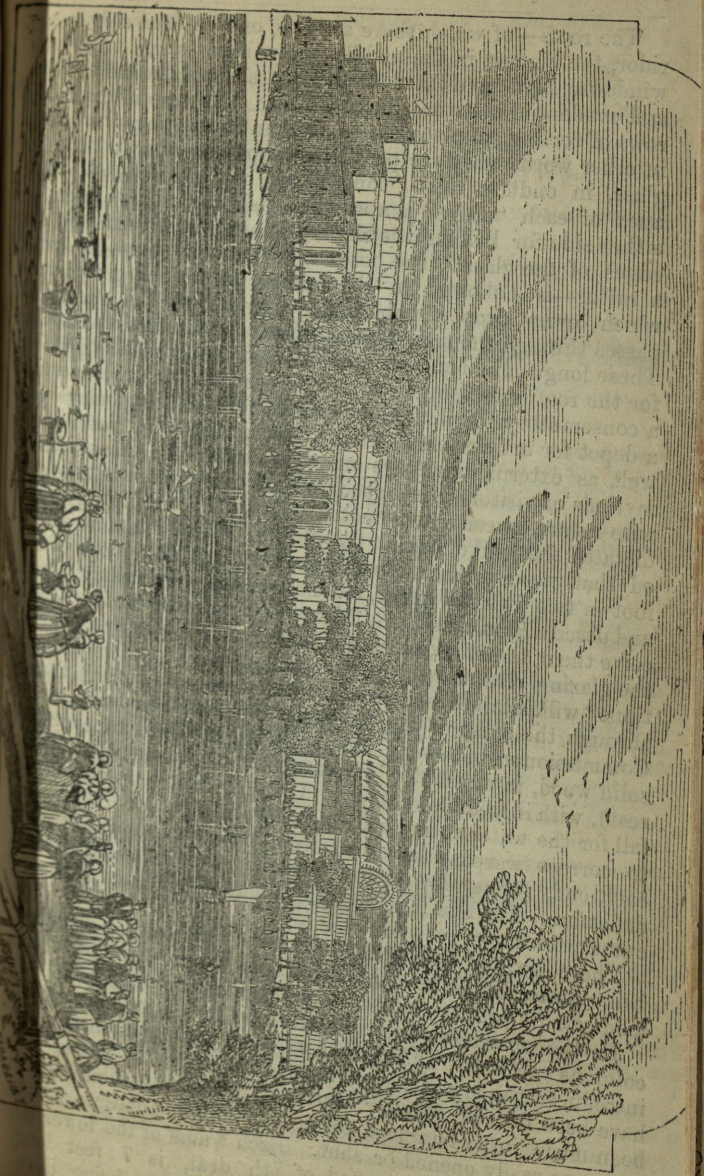
1

the construction has been most remarkable. As many as 308 girders have been delivered on the ground in one week. Seven of the great trusses of the nave were raised in one day. Each man fixed about 200 superficial feet of glass per day. In order to perform these marvels, it was necessary to devise and employ various contrivances for economising labour, such as the sash-bar machine, the gutter machine, the morticing machine, the painting machine, the glazing machine, besides many others of an equally ingenious nature. The average number of workmen employed was about 1800, amongst whom about £2,500 was weekly paid in wages. Even in the payment of the workmen ingenious machinery was called into requisition, by which it was possible to make nearly 2,000 distinct payments within the space of two hours!

If for nothing else, this tremendous pile of transparency is astounding—for its cheapness. It is actually less costly than an agricultural barn or an Irish cabin! A division of its superficies in cubic feet by the sums to be paid for it, brings out the astonishing quotient, of little more than one-halfpenny (nine sixteenths of a penny) per cubic foot; supposing it to be taken down and returned to the contractors when the Exhibition is over. Or, if it remain a fixture, the rate of cost will be rather less than a penny and one-twelfth of a penny per cubic foot. The ordinary expense of a barn is more than twice as much, or two-pence halfpenny per foot. Here are the figures:—The entire edifice contains thirty-three millions of cubic feet. If borrowed and taken down, the sum to be paid is seventy-nine thousand eight hundred pounds: if bought, to become a winter garden, one hundred and fifty thousand pounds.

The smallness of cost is due to the principle of each component of the building being endowed with more than one purpose. The six rows of columns are, as has been already said, not only props but drains. They are hollow, and into them the glass roof will deliver its collections of water. In the base of each column is inserted a horizontal iron pipe to conduct the drainage into sewers. These strong tubes serve also as foundation; they are links that connect the whole of the three thousand three hundred uprights together. At the top, each column is fastened to its opposite associate by a girder, run up by means of a pole and pulley in a few minutes; and, once fastened, no other scaffolding is requisite for the roof which it supports. Thus, by means of the iron pipes below, and the iron girders above, the eighteen acres of structure is held from end to end so compact and fast that it becomes an enormous hollow cube, as immovable as if it were, instead, a solid cube dropped down beside Rotten Row by a gang of Titans.





The roofs—of which there are five, one to each aisle or corridor, the highest in the middle—play many parts. They are windows, light and heat adjusters, rain conductors outside, and condensed moisture ducts within. They are interminable rows of roofing, so placed as to form in the aggregate a plane; in other words, they are parallel rows of the letter **V** done in glass, in endless rides “long drawn out,” thus: **VVV**. The apex of each “ridge” is a wooden sash bar, with notches on either side for holding the sloping laths in which are fitted the edges of the glass. The bottom, or “furrow” bar—otherwise a rafter—is hollowed in the middle, to form a gutter, into which every drop of rain glides down from the glass, and passes through the transverse gutters into the hollow columns. These longitudinal gutters are formed at the tops of the girders: for the roof is self-supporting. This is not all: in converting a conservatory for plants into a resort for breathing beings, and a depot for articles emphatically “to be kept dry;” internal as well as external moisture must be drawn off: the breath of myriads of visitors, condensed against the glass, would otherwise return in continual Scotch mists. That difficulty partly dictated the **A**-like form of the ceiling. Mr. Paxton ascertained that vapours ascending to glass inclined to a slope of one foot in two feet and a-half, do not condense in separate drops and descend again, but slide down over the smooth surface. To receive them, therefore, he grooves each rafter under the inside of the glazing. Into these grooves the condensed breath of “all nations” will fall and be conveyed into the transverse gutters, thence through the columns into the jurisdiction of their honours, the Commissioners of Sewers. These ingenious rafters are cut out of solid wood, in a machine (invented by the inventor of all the rest), with incredible rapidity. In order that there may be a fall for the water to run off, each rafter is slightly curved; and to correct warping, a rod of iron, with nuts and screws at each end, forms the string of the bow, so as to regulate its deflexion. For this ingenious expedient Mr. Paxton has taken out a patent.

There are two important features in the building worthy of being prominently brought before the public: the provision made for its proper ventilation, and for its drainage.

In the spaces or panels formed by the iron and wooden columns vertically, and by the sill and plate horizontally, are introduced the lower tiers of ventilators, originally intended to have been formed of luffer boarding; but the ventilators have been made in an improved form, have a light appearance, and are more easily opened or shut. Each frame of the lower tier of ventilators is constructed of  $\frac{7}{8}$ th deal, is 7 feet long, 4 feet 3 inches high, and  $4\frac{1}{2}$  inches deep; being dove-



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tailed at angles, and further strengthened behind by angles. The blades or luffers are of sheet-iron, forming a flat S curve. Each blade is hung as a swing dressing-glass, with two  $\frac{1}{4}$  inch pivots resting in proper bearings, fixed in the side of the frame. The blades, which are placed horizontally, are 6 inches from centre to centre; the whole being connected together by a vertical deal chamfered bar, by means of forked iron arms  $3\frac{1}{2}$  inches long, and fixed to the sides of a sinking or groove in the vertical connecting-bar, which is 3 inches in width, and of sufficient length to embrace the eight blades. By the weight of a single pound, all the blades can be opened or shut at will, so that a simple lever apparatus will complete this important part of the construction. A wooden stop is introduced, both at top and bottom of the frame, to prevent the upper and lower blades from moving beyond their prescribed limits when closed. The construction of the upper tier of ventilators is similar to that of the lower, but, instead of eight blades, there are only five in each frame. The upper ventilators occupy the space above the close boarding, and are immediately behind the ornamental iron fanlights or panels. There are advantages from this mode of ventilation; it nicely distributes the admitted air, however large the volume of it, and effectually prevents the entrance of water in rainy weather.

The provision made for drainage required considerable skill in arranging, so that no portion of the gutters, extending over an area of roof of from 18 to 20 acres, should at any time be overflowed, however heavy might be the rain falling upon it. The ridge and furrow plan of roofing requires that every length, both of longitudinal or transverse furrow or gutter, should be so formed, as to carry off half the rain-water received into it from the skylights in one direction, and the remainder in the other direction. This is effected by "cambering" every length of gutter, which not only secures this important condition, but also prevents the "sagging" or sinking of the timber below its proper level; thus each gutter-plate is considerably curved upward, and looking along under a continuous line of skylights, the effect is very striking. The surface water from the skylights is received into the longitudinal or three-way gutters, and these again empty themselves into the framed transverse gutters at either end. The hollow iron columns act as rain-water pipes, in conveying the water from the roof into the cast-iron drain-pipes, running in parallel lines along the whole length of the building, and which have each a sectional area of  $28\frac{1}{4}$  square inches.

The flooring on the ground-floor consists of boards, 9 inches wide, laid half an inch apart, on sleepers, so as to permit the dust in sweeping to fall through the spaces between the boards;



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It is thought that the building will be one of the driest ever constructed, since it would always be acting on the principle of a still. Any exhalation that might arise from the soil underneath the floor would naturally rise till he came in contact with the glass at the top ; on any alteration of the temperature it would be condensed on the glass, and must again trickle down by capillary attraction, and find its way to the small groove prepared on each side of "the Paxton gutters," and then be eventually carried away into the sewer ; so that any evaporation would never have the power of returning, because the moment it got condensed on the surface of the glass or sash-bars, it could only escape through the gutters. The grooves not only take away the water, but supposing a pane not to be sufficiently tight in the groove, any small quantity of water that might escape through the edge of the glass and get underneath, by the same principle of capillary attraction would find its way to the groove, and then pass away. The transept-roof and the skylight bars were not only placed horizontally with respect to the vertical part of the arch, they were "herring-boned ;" in fact, they were angular, both horizontally and vertically at the same time. So that in the transept-roof, from top to bottom, the same principle of capillary attraction will be at work and provided for ; and every skylight is arranged on a slope of  $2\frac{1}{2}$  to 1, which is the same as in the horizontal roof.

The exterior surface of the first or ground tier is of wood, for the purpose of greater security, and also to afford a wall space for such articles as require to be hung up in order to be seen to advantage.

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cies provided for them under the branches of the trees, which occupy the north end of the transept ; those whose habits of life are less expensive, or whose palates are less nice, will be accommodated westward ; while for the crowd of visitors the requisite accommodation will be provided on the north-east side of the building.

For safety from fire, a 9-inch water-main, charged constantly with a 70-foot column of water, has been laid ; and from it 6-inch pipes run all round the building, with 16 branches into the interior ; so that an immense quantity of water could be poured on with hose. An engine has been put up specially at the Chelsea Water-works, and the company have undertaken to supply, if needed, 300,000 gallons a day. There are nineteen windows, with doors adjoining, which overlook the whole edifice, so as promptly to discover anything wrong.

Besides the immense space thus devoted to the purposes of the Exhibition, there is on the north side of the building a room set apart for the reception of machinery. The dimensions of this department are on a scale proportionate to the important branch of inventive industry to which it is to be dedicated. It is 946 feet long, 48 feet broad, and 24 feet high. The engine-house stands at the north-western side of the Glass Palace, and will furnish steam to the extent of one hundred horse power to the models within the building. Its steam will print off copies of a newspaper, work all kinds of looms, and in fact, do more at once than steam from any single boiler has ever accomplished.

An Electric Telegraph is constructed in the building, to enable those employed officially to communicate with each other, with the greatest possible facility, and without any running about and confusion.

Mr. Paxton furnished all the necessary details of the construction very minutely, from the concrete filling of the holes in the ground, under each support, through the base-plate, the columns, the connecting-pieces, to which were attached the girders for the galleries, the second and third sets of columns, and the roof-trusses, the box-gutters, and the "Paxton" gutters ; which latter were intended to provide at the same time for conveying away the rain from the roof, and the condensed moisture from the inside. Details were also given of the mode of conveying the rain-water, &c., into the adjoining sewers ; of the supporting columns ; of the ventilation, by means of sets of louvres of galvanized cast-iron ; of the supply of water for the extinction of fire, and for the supply of the fountains ; and of the experiments for testing the girders and trusses, by the hydraulic press erected in the building, by which the strength of the whole was proved before they were used.



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47

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53,

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27.

Messrs. Fox and Henderson's tender was only verbally accepted on the 26th of July, 1850; possession of the site was obtained on the 30th of July; the first column was fixed on the 26th of September; and the building, though not completed in all its details, handed over on the 1st of January to the Royal Commissioners.

As no brick and mortar were used, and all the proportions of the building depended upon its iron pillars and girders, nearly all the materials arrived on the spot ready to be placed and secured in their destined positions. Yet vast operations were necessary, even then, in its construction, and called forth the most admirable display of scientific ingenuity, systematic arrangements, and great energy. Hardly any scaffolding was used, the columns as they were set up, answering their purpose. Machines for performing all the preparatory operations required to be done on the spot were introduced in the building, and some of them invented for the occasion.

Such for instance, as the sash-bar machine, gutter machine, the mortising machine, the painting machine, the glazing machine, and other ingenious contrivances for economising labour. Indeed everything in the progress of the building was conducted with such consummate skill, system, and energy, as to excite the admiration, and frequently the surprise of the throngs who for a considerable period daily visited it. Though more than two thousand workmen were employed in the different departments of construction, the greatest order and regularity prevailed, almost without noise. It was often a most animating spectacle to see so many men busily employed in the various operations tending to the rapid accomplishment of the great design, with groups of visitors watching with intense interest, in one part the sawing machine, in another the sash-grooving, in a third the glaziers, in another the placing of a column or fixing of a girder, and in the transept an immense gang of men raising the enormous ribs, which was perhaps the most difficult of all the diversified operations of the building. When the first two of these ribs were elevated to their proper position in the transept, Prince Albert attended to witness the experiment; upon his departure, at the ringing of a bell, the whole of the men engaged on the building came swarming forth and formed themselves into a semicircle round his carriage to give him a hearty huzza as President of the Society of Arts. As the work approached its completion, her Majesty upon several occasions accompanied Prince Albert, making private and quiet visits to the building, and manifesting great interest and pleasure in what she witnessed.

Throughout the progress of the building it has been visited by many of the most distinguished persons in the country, and



## GENUINE WELSH DIGESTIVE FARM HOUSE BREAD.

H. M. NEVILL, (late of Sidmouth-street), begs to inform the Public that he is Baking Bread by Perkins's PATENT HOT WATER OVEN, and is thereby enabled to offer a very superior article, perfectly free from all impurities arising from the Combustion of Coal, such as Sulphur, and other noxious Gases. It is strongly recommended by Medical Men for persons of Weak Digestion, being free from acidity and other unwholesome properties.

To be had of H. M. Nevill, Sole Manufacturer, 16, Holborn Hill, City; or at 23, Wardour-street, Soho; 20, Francis-street, Tavistock-square; 23, Upper Marylebone-street, Portland-place; and at the corner of Winchester-street, Pentonville.

N.B.—The Premises and the Patent Hot Water Ovens are open to the inspection of all who may be desirous to see them.

40.

## HORTICULTURAL TOOL WAREHOUSE.

GREEN AND CONSTABLE, Wholesale and Retail IRONMONGERS, 36, King William-street, (four doors from London Bridge,) beg to inform Amateurs and Gardeners they have a large assortment of new and improved Garden Tools, including Lyndon's Patent Spades, Lord Vernon's Patent Hoes, Painted Hothouse Syringes, Galvanised Iron Garden Engines, Transplanting Tools, Patent Water-pots, Brown's Patent Fumigator, Improved Garden Labels and Sticks; also a large assortment of Saynor's Pruning and Budding Knives.

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## REMOVAL OF WADSWORTH'S TRUSS AND SURGICAL INSTRUMENT MANUFACTORY.

A. J. WADSWORTH begs to return his sincere thanks to his numerous friends for the liberal support awarded him during the past seven years, and trusts that by pursuing the same system of business as hitherto, to ensure continuance of their favours. At the same time he respectfully informs them and the public generally that he is about to remove his Establishment from 8, Bell-yard, in consequence of the premises being required for City improvements. All letters, parcels, and post-orders, to be directed for the present to 8, Bell-yard Gracechurch-street. Trusses, and all other goods, at manufacturer's prices.

	SINGLE.		DOUBLE.	
	s.	d.	L.	s. d.
A Good Common Truss.....	3	6	0	7 0
Ditto, with Circular Spring .....	6	0	0	12 0
On the principle of Salmon and Ody's expired patent.....	7	0	0	14 0
On the principle of Cole's expired patent.....	10	0	0	18 0
Egg's, or German Truss from.....	10	0	0	18 0

49

## HEWITT AND COMPANY,

Wholesale & Retail Stationers, Engravers & Lithographers,  
**PRINTERS,**

PUBLISHERS, BOOKSELLERS, AND BINDERS,

300, STRAND, LONDON.

HEWITT and COMPANY, in presenting themselves to the notice of Authors, Bankers, Merchants, and the Literary and Commercial Public generally, beg respectfully to inform them that they have commenced in the above business; and having had great experience, in the various departments, they confidently assert their ability to offer to their Patrons those important advantages arising from a thorough and perfect practical knowledge of the Trade.

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the contractors finding that the numbers who flocked to it impeded in some degree their operations, determined to make a charge of five shillings for admission, the proceeds of which were to constitute an accident-relief fund for the workmen. A very considerable sum was so raised, though the number of accidents has been very small. Some idea of the number who flocked to see the exterior may be found from the fact that on one Sunday as many as 100,000 persons entered the gates of Hyde Park.

Certainly, no part of the Exhibition merits more praise than the building itself; it is in all respects one of the most satisfactory results which has flowed from the project. Its magnitude, the celerity with which it has been constructed, and the materials of which it is composed, all combine to insure for it a large share of that attention which the Exhibition is likely to attract, and to render its progress a matter of great public interest. A building containing 33,000,000 cubic feet, and with an exhibiting surface of about 21 acres, roofed in, and handed over to the Commissioners within little more than three months from its commencement; constructed almost entirely of glass and iron, the most fragile and the strongest of working materials, combining the lightness of a conservatory with the stability of our most permanent structures—such a building will naturally excite much curiosity as to the mode in which the works connected with it were conducted, and the advances which were made towards its completion. Enchanted palaces that grow up in a night are confined to fairy-land, and in this material world of ours the labours of the bricklayer and the carpenter are notoriously never-ending. It took 300 years to build St. Peter's at Rome, and 35 to complete our own St. Paul's. The New Palace of Westminster has already been 15 years in hand, and still is unfinished. We run up houses, it is true, quickly enough in this country; but if there be a touch of magic in the time occupied, there is none in the appearance of so much stucco and brick-work as our streets exhibit. Something very different from this was promised for the great edifice in Hyde Park. Not only was it to rise with extraordinary rapidity, but in every other respect is to be suggestive of "Arabian Nights" remembrances.

The eight electro-magnets employed in the clock for the transept of the Exhibition Building, are composed of charcoal iron,  $\frac{3}{4}$  in. square; on each leg of every magnet is a brass rod covered with 1,500 ft. of isolated copper wire, or 25,000 ft. in all, weighing about  $11\frac{1}{2}$  cwt. The 12 hours of the day are arranged in a semi-circle; and the dial has been made in that shape accordingly, as a circular one would have disfigured the architectural beauty of the building. The figures are arranged



**BUCK AND STOKY,**

WHOLESALE AND RETAIL

**TOBACCONISTS,**

IMPORTERS OF FOREIGN CIGARS,

ONLY PROPRIETORS OF THE TALLY HO! SNUFF,

*THE AMERICAN CIGAR STORES,*

263, HIGH HOLBORN,

*Adjoining the American Bowling Saloon.*

52

TO BUYERS OF WOOLLEN GOODS.

**WILSON and CAMPBELL, 350, Oxford-street,** have on sale the most select Stock of every Article in Cloths, Doeskins, and rich Vestings, And in consequence of the Ready Money System adopted by W. and C., they can offer goods at such prices that at once secure the custom of all who may inspect their stock. Every article is well shrunk, and all imperfect or unsound carefully excluded.

350, OXFORD STREET,

AND

51, BLACKFRIARS ROAD.

48

**NORTHERN RAILWAYS COAL COMPANY'S DEPOT.**

**NOTICE** is hereby given, the Company have reduced their Tariff of Prices, and recommend their numberless patrons and the Public to take advantage of the unprecedented low price of the First-Class Sunderland Wall's-End Coals, and lay in their Winter Stock. Coals from the Collieries of Sunderland, Durham, Clay Cross, and South Yorkshire, brought via Railway to the London depots in the some Trucks that receive them at the pit's mouth, which prevents breakage and preserves the Coals in much better condition, and quite free from small; delivered by this Company into the cellars free of all other charges, at the following Tariff of Prices:—

**SUNDERLAND WALL'S-END.**

1st Class.

Haswell .....	19	6
Barton's .....		
Swart's .....		
Lambton's, &c. ....		

2nd Class.

Hartlepool .....	19	0
Balmont .....		
Cardoc, &c. ....		

**INLAND COALS.**

1st Class.

Clay Cross .....	18	6
Burning cheerful, and leaving little ash.		

Derbyshire.....	1st Class.	17
All lumps.		

**YORKSHIRE.**

1st Class.

Newton, Chambers and Co.'s, and Charlesworth and Co.'s	17
Silkstone Collieries .....	
Barnsley, &c. ....	

2nd Class.

Elsecar.....	16
From Earl Fitzwilliam Pits.	

The Public are cautioned against parties assuming the name of the Company. To insure speedy delivery of these Coals, orders should be addressed to the undersigned, City Office, 43, Skinner-street, Snow-hill. All Coals ordered of this Company must be paid for at the time the order is given, or on delivery, or to save trouble cheque, crossed, should be sent with the order.

(By order)

S. JAMES, Manager.  
City Office, August 1st, 1851.

work, the time lost in the commencement of the struggle. He considered that the grandeur of effect produced by the great repetition of simple forms in the building might be still further enhanced "by a system of colouring, which, by marking distinctly every line in the building, should increase the height, the length, and the bulk." In this edifice there can be little variation of light and shade, and without the employment of bright colours, the immense number of similar lines of the building, falling one before the other, would lose all distinctness, and form one dull cloud overhanging the Exhibition, rendering it impossible to distinguish in the distance one column from another, and injuring the general effect produced by the objects collected in the Exhibition. He has therefore, employed for the internal painting blue, red, and yellow, in such relative proportions as to neutralize each other, and thus, no one colour being dominant to fatigue the sight, all the exhibited objects will assist, and be assisted, by the colours used on the building itself. Mr. Jones considered the best mode of using these colours was "to place blue, which retires, on the concave surfaces; yellow, which advances, on the convex; red, the colour of the middle distance, on the horizontal planes, and the neutral white on the vertical planes." He has therefore painted the undersides of the girders red, the round portions of the columns yellow, and the hollows of the capitals blue, in due proportions. All the stalls are covered with red cloth or pink calico, by which means not only is the unsightly woodwork concealed, but a warmth of covering is thus given to the whole ground area of the building, which combined with the mass of blue overhead, and the yellow stripes on the columns, produce a most harmonious effect, all of which is softened by covering the roof and south side with unbleached calico, to prevent the glare of light which would necessarily take place in a building whose roof and sides are chiefly of glass. Since the painting has been completed, and bright articles introduced into the structure, the result has clearly proved that Mr. Jones has proceeded on sound scientific principles, as he has certainly succeeded in producing the best possible effect. He has also displayed great knowledge in his profession, by the judicious distribution of various large articles, and groups of articles, with a view to their effect upon the general internal aspect of the Exhibition. The whole edifice is surrounded with ornamental railings, which harmonise admirably with the peculiar and light appearance of the vast structure.

The safety of the structure has been much discussed, in consequence of adverse opinions expressed by Mr. Turner, who constructed the immense conservatory in Kew Gardens, and the still more important opinion of Professor Airey, the Astronomer



**A WEEK'S WASH FOR 2d., WITHOUT RUBBING.**

**TWELVETREES, BROTHERS,'**

## **IMPROVED WASHING PREPARATION**

Still maintains its pre-eminence as the quickest, safest, most effectual, and cheapest detergent in the world; it is the only Washing Fluid extant, in which the Clothes can be boiled. It saves much time, much trouble, much firing, and much soap. It does not injure the most delicate material, but improves colours, whitens linen, rendering it beautifully soft and serviceable, and softens harsh and hard fabrics. For flannels, blankets, woollens, prints, and muslins it is matchless; and for every purpose where time, money, and cleanliness are objects in domestic management, it ought to have the first place.

A Week's Washing can be accomplished with very little labour in about Two Hours. All that is necessary is to put a small quantity of Soap and this Preparation with the Clothes into boiling water; take them out after boiling half an hour, rinse in cold water, and dry them. Little or no rubbing is required, and the saving of time is so astonishingly great, that one woman by using this Preparation is able to do more washing than five women can on the old method. One-third of a SIXPENNY BOTTLE is sufficient for five gallons of water, which can be used for three boilings, being equal to 15 gallons; and where the old method is attended with disorder, trouble, and inconvenience, a single trial of this Preparation is solicited.

*Sold in Bottles at 6d., 1s., and 1s. 6d. The 1s. 6d. Bottles contain four times the quantity of the Sixpenny size.*

Sold by every Chemist, Grocer, Stationer, and General Dealer in the kingdom; and wholesale by TWELVETREES, BROTHERS, Manufacturers, Holland-street, Blackfriars Bridge, London.

TWELVETREES, BROTHERS, have been appointed Wholesale Agents for introducing into Town and Country, with the above article,

**THE GLENFIELD DOUBLE REFINED POWDER STARCH,** which requires no boiling, is perfectly free from all impurities, and is warranted not to adhere to the Iron, in Packets at 1d., 2d., 4d., and 8d. each; also, the

**GLENFIELD ROYAL PATENT SOLUBLE BLUE FOR WASHING;** which supersedes Stone and Powder Blues, dissolves freely in warm water, and imparts to the clothes a most beautiful, uniform, and delicate tinge. In Packets, at 1d., 2d., 4d., and 8d. each.

## **TWELVETREES, BROTHERS,' SUPERIOR COMMERCIAL INKS AND WRITING FLUIDS.**

These beautiful Inks will not be found to cling to the pen, causing them to write with great fluidity, although the colouring material is dense. Being permanent and indelible, and flowing equally with steel as with quill pens, these Writing Fluids are confidently recommended for the Merchant's counting-house, the Solicitor's and Banker's office, the Tradesman's shop, the library of the Nobleman, the desk of the Student, the boudoir of the Lady, and for universal adoption by all classes of individuals.

These brilliant unsurpassable BLACK, deep unchangeable BLUE, elegant and indelible RED, and rich superb VIOLET, are alike distinguished for their valuable permanence of colour and clear, soft flowing properties.

*Sold in Bottles, at 1s., 6d., 3d., 2d., and 1d. each.*

## **TWELVETREES, BROTHERS,' SUPERIOR INDELIBLE MARKING INK FOR LINEN,**

Writes with equal facility on the commonest texture as on the finest fabric; it is the most expeditious mode of marking linen ever offered to the public, and is proof against repeated washings.—Sold in Bottles, at 6d. and 1s.

Manufactured by TWELVETREES, BROTHERS, Holland-street, Blackfriars Bridge, London.

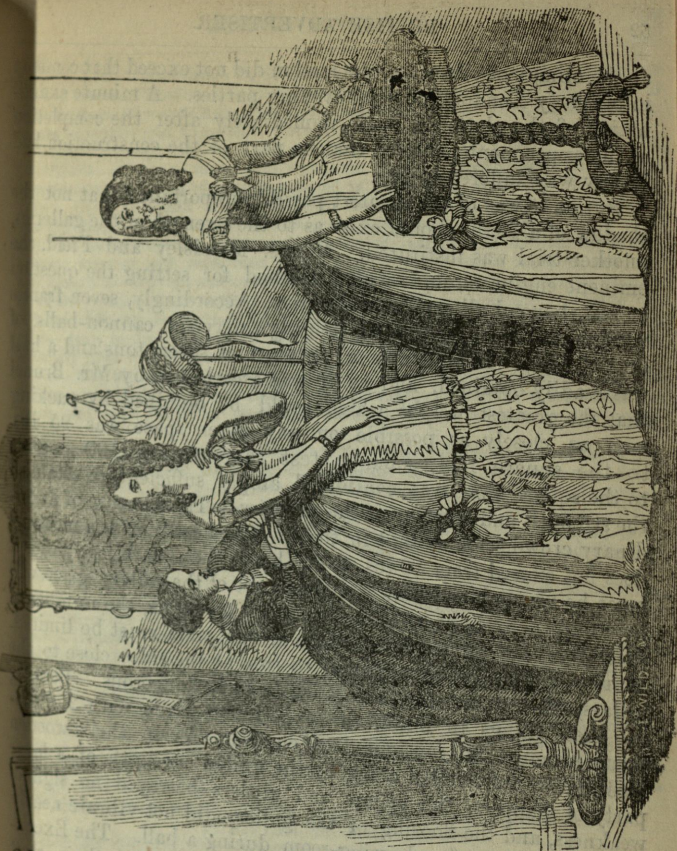
Royal, that the building was not sufficiently secure, and he feared it would some day come tumbling about the ears of the people like a pack of cards. But the question has been set at rest in the most satisfactory manner by the application of tests far beyond any strain which could arise from the densest possible packing of visitors in the galleries. The first experiment was made in the presence of her Majesty and Prince Albert, the immediate object of which was to ascertain, by various tests of the severest character, to what extent oscillations could be conveyed to the gallery by the regular motion of a living load, and to ascertain whether the provisions which had been made to meet such contingencies were sufficient.

The preparations made for the experiment consisted of the construction of a perfect bay of gallery, with its floors, binders, girders, and connecting pieces, in every respect complete, and similar to the actual gallery, supported upon four points, bedded on temporary foundations. Rows of planks, the full width of the platform, led up to it, and down from it, so that a row of men as wide as the gallery might be able to march up and down in close column. Three hundred workmen were first assembled by the contractors, and allowed to cover the platform and the planks connected with it. They were then compressed into the smallest space upon which they could stand.

The load borne on the planks represented the share of pressure which would be produced by the crowding of adjacent bays of gallery. The amount of deflection produced by this load was inappreciable. The men then walked regularly and irregularly, and ran over it. The elasticity of the floor, allowing play to the timbers and the wrought-iron work, was admirably developed by this test; and it became apparent that this quality of elasticity was of the greatest value in protecting the cast-iron girders from sudden shock.

Thus, in the severest test which could possibly be applied when the men standing closely packed together continued jumping simultaneously for several minutes, although in the severest vibrations of the floor the binders played up and down, the extreme deflection of any of the girders did not exceed one-fourth of an inch. As the contractors' men were unable to keep military time in their step, and it was considered desirable to ascertain the effect of perfectly regular oscillations, the whole of the corps of Royal Sappers and Miners on the ground, set in close columns, were marched several times over and around the bays, and were finally made to mark time in the most trying manner. With the result of this last test, the eminent scientific men present expressed themselves highly gratified, observing that while





**OLD DR. JACOB TOWNSEND'S GENUINE, ORIGINAL, UNITED STATES' SARSAPARILLA.**

This Compound Sarsaparilla of Old Dr. Townsend has nothing in common with preparations bearing the name in England or America. Prepared by one of the ablest *American Chemists*, having gained the approbation of a great and respectable body of *American Physicians and Druggists*, universally approved and adopted by the *American people*, and forming a compound of all the rarest medicinal roots, seeds, plants, and flowers that grow on *American soil*, it may be truly called the *Great and Good American Remedy*.

When received into the stomach it is digested like the food, and enters into the circulation precisely as the nutriment part of our aliment does.

**ITS FIRST REMEDIAL ACTION IS UPON THE BLOOD,**

and through that upon every part where it is needed. In this way it purifies the blood of excess of Bile, Acids, and Alkalies, of pus, of all foreign and morbid matter, and brings it into a healthy condition. In this way it is that this medicine is conveyed to the Liver, where it allays inflammation, or relieves congestion, removes obstructions, cleanses and heals abscesses, dissolves, gummy or thickened bile, and excites healthy secretions in this organ. In this way, also, is this medicine conducted to the Lungs, where it assuages Inflammation, allays Irritation, relieves Cough, promotes Expectoration, dissolves Tuber-

at the climax of vibration, the motion did not exceed that common in ordinary London houses at evening parties. A minute examination of the platform, made immediately after the completion of the experiments, showed that no part of the construction had in any way suffered injury.

But as it was of the greatest possible importance that not the shadow of a doubt should exist as to the strength of the galleries, another trial was instituted. Messrs. Maudsley and Field, the eminent engineers, suggested a method for setting the question at rest, beyond all cavil and timidity. Accordingly, seven frames were made, each capable of holding thirty-six cannon-balls, of 68 lbs. each. In this way a pressure of seven tons and a half was readily obtained, and as it was ascertained by Mr. Brindley that the greatest weight which could be obtained by packing men as closely as possible on any given space was 95 lbs. to the square foot, such a test representing 100 pounds to the square foot, was considered amply sufficient to establish the strength and security of the galleries. The pressure of an ordinary crowd, such as that in the pit of a theatre or at a meeting, does not exceed from 50 lbs. to 60 lbs. to the square foot; and it must be remembered that as a great part of the gallery space will be occupied by light articles displayed on stalls, the number of spectators that can circulate there at one time must be limited. Moreover, the passages are made to run at the sides close to the pillars, where the strain is least likely to be dangerous. Bearing all these things in mind, the experiment made with 252 68-pounders must be considered conclusive. As in their wooden frames they were rolled along by the united strength of a large party of Sappers, the pillars and girders betrayed no sign of weakness, and the flooring of the gallery did not vibrate nearly so much as that of a drawing-room during a ball. The Executive Committee and the principal members of their staff watched the experiment with great interest, and were, as every body has been since, perfectly satisfied.

There is perhaps no portion of the building, the strength of which has been so much debated, and by many at first considered insufficient, as the slender columns which form the only supports of the roof and galleries. We are so much accustomed to see large massive piers used either for the real or apparent support of the upper portions of ordinary buildings, that the mind requires some very positive proof in order to be convinced that a column only eight inches in diameter, and hollow, can be safely depended upon to perform the important offices required of it in the Exhibition Building. Architects and persons engaged in designing and erecting buildings are well aware of the fact, that it is frequently necessary to encase the small supports of floors, or other portions of a building, so as to give an increased appearance of



cles, and heals Ulcerations. In like manner it acts on the Stomach to neutralise Acidity, remove Flatulence, Debility, Heartburn, Nausea, restore Tone, Appetite &c. In the same way this good medicine acts upon the Kidneys, on the Bowels, on the Glandular and Lymphatic system, on the Joints, Bones, and the Skin.

*It is by cleansing, enriching, and purifying the blood that Old Dr. Townsend's Sarsaparilla effects so many and wonderful cures.* Physiological science has demonstrated the truth of what is asserted in *Holy Writ*, that "*the Blood is the Life.*" Upon this fluid all the tissues of the body depend for their maintenance and repletion. It replenishes the wastes of the system, and gives to every solid and fluid its appropriate substance or secretion—earthy and mineral substance, gelatine, marrow, and membrane to the Bones—fibrine to the muscles, tendons, and ligaments—nervous matter to the brain and nerves—cells to the lungs—linings to all the cavities; hair to the head—nails to the fingers and toes; urine to the kidneys; bile to the liver—gastric juice to the stomach; sinovial fluid to the joints—tears to the eyes; saliva to the mouth; moisture to the skin—and every necessary fluid to lubricate the entire frame-work of the system.

Now, if by any means this important fluid becomes corrupt or diseased, and the secreting organs fail to relieve it of the morbid matter, the whole system feels the shock, and must sooner or later sink under it, unless relieved by the proper remedy.

When this virulent matter is thrown to the Skin, it shows its disorganising and virulent influence in a multitude of Cutaneous diseases, as Salt Rheum, Scald Head, Erysipelas, Superficial Ulcers, Boils, Carbuncles, Pruritus or Itch, Eruptions, Blotches, and itching, burning sores over the face, forehead, and breast. When thrown upon the cords and joints, Rheumatism in all its forms are induced; when upon the kidneys, it produces Pain, Heat, Calculi, Diabetes, and other sad disorders of the Bladder.

When carried by the circulation to the bones, the morbid matter destroys the animal and earthy substances of these tissues, producing necrosis, *i. e.*, decay or ulceration of the bones. When conveyed to the Liver, all forms of Hepatic or Bilious diseases are the unavoidable product. When to the Lungs, it produces Pneumonia, Catarrh, Asthma, Tubercles, Cough, Expectoration, and final Consumption. When to the Stomach the effects are Inflammation, Indigestion, Sick Headache, Vomiting, Loss of Tone and Appetite, and a fainting, sinking sensation. When it seizes upon the Brain, or Nervous System, it brings on *Tic-doloureux*, St. Vitus' dance, Hysteria, Palsy, Epilepsy, and many other distressing ailments both of body and mind. To the Ears, Otorrhoea; to the Throat, Bronchitis, Croup, &c. Thus; all the maladies known to the human system are induced by a corrupt state of the blood.

With no general remedy on which implicit reliance can be placed as a

#### PURIFIER OF THE BLOOD,

Disease and Suffering, and consequent *want*, stalk unchecked and unsubdued in every land in all the world. If there is arrest of action in any of the viscera, immediately they begin to decay. If the blood stagnates, it *spoils*; if the bile does not pass off, and give place to fresh, it *rots*; if the urine is retained, it ruins body and blood. The whole system, every secretion, every function, every fluid depend for their health upon Action, Circulation, Change, giving and receiving—and the moment these cease, Disease, Decay, and Death begin.

In thus tracing the causes and manifestations of disease, we see how wonderful and mysterious are the ways of Providence in adapting the relations of Cause and Effect, of action and reaction, of life and death.

All nature abounds with the truth that every active substance has its opposite or corrective. All poisons have their *antidotes*, and all diseases have their *remedies*, did we but know them.

Upon this principle was Dr. Townsend guided in the discovery of this medicine. Prepared expressly by the old Doctor to act upon the blood, it is calculated to cure a great variety of diseases. It is the very

#### BEST SPRING MEDICINE

to cleanse the Blood, Liver, Stomach, Kidneys, and Skin. In the spring, the blood of most persons is apt to be more or less impure, the head heavy, the skin yellow, often covered more or less with Eruptions, Pimples, Blotches, and the general system deranged or disordered—but however affected, this *searching purifier* sweeps out all impurities.

strength, in order to satisfy the eye of the ordinary observer, who would otherwise be alarmed by a feeling of insecurity; it is not therefore, at all surprising that, previous to the completion of the building, when the test of experience was wanting, there were many who felt much anxiety on the subject of its security, especially the strength of the columns; even some members of the technical professions expressed their misgivings, which, however, have happily proved groundless.

Let us examine this important element of the building rather more closely, and we shall find that it is the most simple in form, as well as the most perfectly adapted to its different purposes, of any of the constructive parts of the building. Besides the obvious purpose of supports, the columns also serve as water-pipes, to carry down the rain water from the roof into the drains; while they are therefore, necessarily hollow for the latter purpose, that form appears to be also the best that could be given them in order, with the least quantity of material (and therefore at the least cost), to make them efficient for the main purpose. Nature is ever the best teacher of structural economy, and in this instance, she furnishes striking examples of the superhuman skill manifest in all her works. In the principal bones of animals, stalks of plants, &c., the material is disposed in a cylindrical tube form, which is the strongest; for, if we compare a hollow cylinder with a solid one, containing in section the same quantity of material, we shall find that the former is only crushed with four times the weight necessary to crush the solid cylinder—that is to say, it is four times as strong; and it has been proved, by actual experiment, that two ordinary goosequills, each one inch long, will support the almost incredible weight of 2 cwt., and that even two straws of the same length will not give way under a load of 28lbs., a fact that was probably unknown to the originators of the saying, “weak as a straw.”

Before leaving this part of our subject, we must not neglect to inform the visitor that the Crystal Palace ought to be viewed from a distance, in order to be fully appreciated in its external grandeur. The approaches by the Kensington-road and Rottenrow are entirely too close to afford a proper view. The best points for a spectator are the drive along the Serpentine and the bridge over it. There, the distance, the height of the ground, and the open space, enable the eye to take in a considerable portion of the building. The trees even then shut out part of the prospect, but enough remains to captivate the beholder. The vast extent of ground covered by the structure, the transparent character of its walls of glass, its terraced elevations, the airy abutments, “the large transept, with its arched and glittering roof shining above the great vitreous expanse around it, remind-



In FEMALE and NERVOUS DISEASES, this great remedy does marvels in regulating the menses, making them natural, relieving pains, cramps, spasms, fainting—and carrying off all those disturbing and debilitating influences which cause the falling of the womb, leucorrhœa or the whites. This superior remedy is a great TONIC, gives strength to weak organs, weak nerves, weak stomach, and debilitated muscles and joints, and enriches the blood, and all the fluids of the body.

It is a medicine which has been used by hundreds of thousands—been recommended by numerous most RESPECTABLE REGULAR PHYSICIANS to the sick—and as it acts *through the blood* upon every tissue and fluid of the body; upon all the circulating, digestive, nutritive, and secreting organs—so it arouses a pure and healthy action throughout the whole economy—cleanses it of morbid matter—and imparts vitality to every minute part of the whole structure.

*Its virtue is unsurpassed—its success unequalled—and its praises are echoed from all parts of the Land!*

POMEROY, ANDREWS, & CO.,

*Sole Proprietors.*

GRAND IMPERIAL WAREHOUSE, 373, STRAND, LONDON,  
(adjoining EXETER HALL.)

Caution.—Old Dr. Jacob Townsend is now over 70 years of age, and has long been known as the *Author and Discoverer* of the

“GENUINE ORIGINAL TOWNSEND SARSAPARILLA.”

PRICE.—PINTS, 4s.—QUARTS, 7s. 6d.

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THESE glass letters are intended for the decoration of shop fronts, lamps, shop facias, &c. They are of several kinds, being made in various colours, and are affixed with transparent cement to glass fronts, after the manner of the brass letters now in use: but presenting these novel advantages, viz:—That they do not tarnish or cause any trouble in cleaning, and being transparent, they show brilliantly at night as well as in the day, they admit of a high degree of ornamenting, such as engraving, bevelling cutting, and the like.

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This day is published, Price 2d., Stamped 3d., No. 13, for August, of  
THE PIONEER; RECORD OF MOVEMENTS AND TEACHER OF HEALTH  
Contents: Mind and its Capacities—The Peace Congress—Sanitary Condition of the Metropolis—On the Predisposing Causes of Disease. By Dr. Viettinghoff—Temperance Festival in Liverpool—Model Lodging Houses—Miss Dix, of America—Notices to Correspondents—Abolition of the Newspaper Stamp—The Poetry of Statistics—The Income Tax—On the Mental and Moral Improvement of the People, by Col. Johnson—The Broken Heart, a Tale, by Shirley Hibberd.—The Council: Phrenological Science, Letter II.—Phrenological Question—New Principles of Civilization—Letters on Labour Reform: Currency and Exchange—The Drug System.—Literature: The Zoist—Worthington's Life of Christ.—Miscellany: Facts in brief; Transubstantiation; Battersea Park; George Herbert's Bemerton; An Irish Funeral; Vocal Music Conductive to Health; The Lock-picking Experiments; Society of Friends of Alleged Lunatics; Casatchouc; Sanatory Congress; A Christian Bishop.—Advertisements.  
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ing one of "nothing ever heard of before," are seen from these points to the greatest advantage, and the sight of them will well repay a visitor for any little additional trouble he may take in seeking these points of view.

The enthusiastic feeling excited by the World's Industrial Exhibition has given rise to the following poetical effusion, by Martin F. Tupper, which breathes so generous a spirit, and one so proud of the position which this exhibition gives the artisan, that we cannot resist its insertion :—

Hurrah ! for honest Industry, hurrah for handy Skill !  
Hurrah ! for all the wondrous works achieved by Wit and Will !  
The triumph of the Artisan has come about at length,  
And Kings and Princes flock to praise his comeliness and strength.

The time has come, the blessed time, for brethren to agree,  
And rich and poor of every clime at unity to be ;  
When Labour, honoured openly, and not alone by stealth,  
With horny hand and glowing heart may greet his brother Wealth.

Aye, Wealth and Rank are Labour's kin, twin brethren all his own,  
For every high estate on earth, of labour it hath grown ;  
By duty and by prudence, and by study's midnight oil,  
The wealth of all the world is won by God-rewarded toil.

Then hail ! thou goodly gathering, thou brotherhood indeed !  
Where all the sons of men can meet as honest labour's seed ;  
The tribes of turban'd Asia, and Afric's ebon skin,  
And Europe and America, with all their kith and kin !

From East and West, and North and South, to England's happy coast—  
By tens of thousands, lo ! they come, the great industrial host—  
By tens of thousands welcomed for their handicraft and worth,  
Behold they greet their brethren of the workshop of the earth.

Right gladly, brother workman, will each English Artisan  
Rejoice to make you welcome all, as honest man to man ;  
And teach, if aught he has to teach, and learn the much to learn,  
And show to man in every land how all the world may earn !

Whatever earth, man's heritage, of every sort can yield,  
From mine and mountain, sea and air, from forest and from field ;  
Whatever reason, God's great gift, can add or take away,  
To bring the worth of all the world beneath the human sway ;

Whatever Science hath found out, and Industry hath earned,  
And Taste hath delicately touched, and high-bred Art hath learned,  
Whatever God's good handicraft, the man He made, hath made,  
By man, God's earnest artisan, the best shall be displayed !

O think it not an idle show, for praise, or pride, or pelf,  
No man on earth who gains a good can hide it for himself ;  
By any thought that anything can anyhow improve,  
We help along the cause of all, and give the world a move !

It is a great and glorious end, to bless the sons of man,  
And meet for peace in doing good, in kindness, while we can ;  
It is a greater and more blest, the human heart to raise,  
Up to the God who giveth all, with gratitude and praise !



## WESTON-SUPER-MARE,

### SOMERSET.

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THE climate of this place demands especial attention, inasmuch as to its salubrious influence must be greatly attributed the fact of an insignificant fishing hamlet having, in a very short space of time, sprung up into one of the most prominent places of healthful and fashionable resort in the West of England. In point of salubrity, however, it differs from most of them in some essential peculiarities. The air is *dry* and *bracing*, yet possessing a softness and balminess which is totally independent of humidity; and is consequently, whilst extremely grateful, exhilarating and stimulant, without any relaxing tendency whatever. Careful observation of the precise locality will account for many of the advantages possessed. The town is situated just within one point of what might be considered a triangle looking to the sea (to the westward) as the base. It nestles closely under Weston or Worlebury Hill, by which it is fully protected from the north and north-east; whilst at from two to five miles distant is a range of hills to the southward, comprising Bream Down, Uphill, and Hutton hills, and is in fact a termination of the Mendip range. From the base of the supposed triangle, these hills will be found to converge, and not meet exactly at a point, but to form at some distance to the eastward a kind of contraction or throat, leading into the North Marsh, through which aerial egress is easy but regress almost impossible. *A remarkable immunity from fog*, which is a matter of almost daily remark, is thus easily accounted for, as well as the surprise of many who having approached Weston through a dense mist, find it supplying a perfectly clear atmosphere. Fog when it occurs, follows the course of these convergent hills separately, leaving the town quite free; and the two tributaries of watery vapour coalesce only at

the point where the hills approach nearest each other,—whilst a return or land fog, from the eastward, instead of urging itself through the before-mentioned throat, takes a course more readily open to it by passing on the other side of the protective hills.

The *Soil* is for the most part dry, sandy, and gravelly; the upper part of the town, being that on the hill side, has a base of limestone rock; all forming an easy medium for the percolation and running off of all the rain that falls. And in no part whereupon buildings are erected, or contiguous to these, is the soil of that character which holds water only to deliver it up again in the form of vapour under the influence of the solar rays.

The surrounding district bears ample testimony of healthy cultivation, and though beautifully sheltered by well directed plantations, nothing like exuberant vegetation destined to decay is to be found. One serious drawback to the healthiness of this town has now for some years been removed by the completion (under the authority of an Act of Parliament for general improvement) of a full and efficient drainage. Another evil is likewise overcome by an improved mode of boring wells for the supply of pure water; whence, many houses condemned for presenting this element in a brackish form, have completely redeemed their character. It is calculated that one well alone, sunk at no very great expense, is capable of supplying the whole town, if necessary, with the purest water.

The most striking peculiarity of this climate is the great amount of therapeutic agency which it supplies; this, though vouchsafed to all periods of life, is remarkably afforded in childhood, as is daily witnessed from the rapidity with which the lack-lustre, pasty features, attenuated limbs, and listless gait, which too clearly indicate the delicate and cachectic predisposition, are exchanged for a robust frame, activity of body, and chubby cheeks, stamped with the rosy tint of health. In reference to this singular effect upon children, it has often been remarked that Weston seems to present in a more concentrated form, all those essentials to robust health



usually sought at the sea side. The great distance to which the ebbing tide recedes from the shore, leaving a large tract of what appears mud, has ever been an eyesore to those who approach the town at the time of low water, and not unfrequently has raised a suspicion of consequent unhealthiness. It must be remembered however, that the surface referred to is not a bed of *mud* at all, but of stiff clay. There can be no stagnant water or unwholesome emanations, as the space in question is washed twice a day by the flowing tide, which receding, leaves it covered with a thin layer of salt water and fresh sea weed. The only emanations that can possibly accrue therefore, are of a healthful character, viz., saline particles taken up and circulated pure or in the form of spray throughout the atmosphere—this the sense of taste readily recognizes; whilst further proof, if wanting, is found in the actual deposits of salt upon vegetation, extending several miles inland after a strong westerly gale; beyond which it is but a fair presumption that the sea weed contributes its quota of Iodine the more fully to impregnate the air with wholesome combinations. Hence an imaginary disadvantage appears to be fraught with positive and great good. The theory here sketched might be questioned, and as a theory simply would be valueless, if it preceded instead of following the long acknowledged fact of increasing salubrity.

As a place of winter resort, it seems strange that Weston should within the last few years only have attracted attention, whilst its very situation seems so expressly to have adapted it for this. Sheltered, as has been observed, from the north and north-east, it enjoys what may be almost called a *special* southern aspect, furnished by that wide chasm or reft in the southern range of hills through which the river Axe flows at a distance of two miles, affording an uninterrupted view of the Quantock Hills. Its highest advantage, however, is to be found in its free opening to the westward, from which quarter prevail the breezes or gales, as the case might be, during the winter season. Yet, let it blow ever so hard, there is a calmness and refreshing property tempering the gale in a

manner which is experienced in very few localities. So bold and direct is the westward opening, that the breezes come without let or hindrance directly across the Atlantic, to use a common phrase, "genuine as imported." The fact of the salubrity and well-tempered influence of these breezes needs no assistance from theory, inasmuch as it is confirmed by another fact, viz., that sea winds from the west are softened by passing over a mass of water, the temperature of the surface of which, even in January, bears a proportion of from 48 to 52 degrees of Fahrenheit, to 45 or 50 degrees of land temperature.

Meteorological observations are much in favour of the winter climate of Weston-super-Mare, as proved by tables which it is here unnecessary to insert. Taking the average of the winter months for the few years last past, the mean temperature will be found to be only two degrees lower than that of the south of Devon, a trifle higher than that of Bath, and nine degrees above that of London. Whilst during the summer months, the temperature will be found considerably lower than that of the places mentioned. To enumerate the diseases in which this climate exercises a beneficial influence, would be to specify nearly "all the ills that flesh is heir to." To one state of disease only is the climate prejudicial, and that is consumption in the *more advanced stages*; the air being too stimulating and bracing in such cases; whilst in the earlier stages of the same disease, much benefit might be expected from the arrest of its progress. The rate of mortality in this district is unusually low, and bears no proportion to the number of births. Endemic disease is unknown, whilst the usual epidemics appear to be much mitigated by the climate, and run, when they occur, a very moderate course.

SCHOOL FOR YOUNG GENTLEMEN,

*Wellington House, Weston Park.*